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**Shin et al.**

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(54) **STACK PACKAGE AND METHOD FOR  
MANUFACTURING THE SAME**

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**H01L 21/78** (2006.01)  
**H01L 25/11** (2006.01)  
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**24/18** (2013.01); **H01L 24/19** (2013.01); **H01L**

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**H01L 25/117** (2013.01); **H01L 23/5389**  
(2013.01); **H01L 2224/04105** (2013.01); **H01L**  
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(2013.01)

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**H01L 25/50**; **H01L 21/7806**; **H01L 21/7812**;  
**H01L 23/5389**

See application file for complete search history.

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(57) **ABSTRACT**

A stack package includes a cover film, a first package having  
a first semiconductor chip which is attached to the cover film,  
a first adhesive member which is formed to seal the first  
semiconductor chip and a surface of the cover film, and a first  
circuit pattern which is disposed over the first adhesive mem-  
ber and electrically connected with the first semiconductor  
chip; a second package disposed over the first package, hav-  
ing a second semiconductor chip which is electrically con-  
nected with the first circuit pattern, a second adhesive mem-  
ber which is formed to seal the second semiconductor chip,  
and a second circuit pattern which is formed over the second  
adhesive member, and a via formed to pass through the sec-  
ond circuit pattern and the second adhesive member and to be  
electrically connected with the first circuit pattern and the  
second circuit pattern.

**6 Claims, 10 Drawing Sheets**

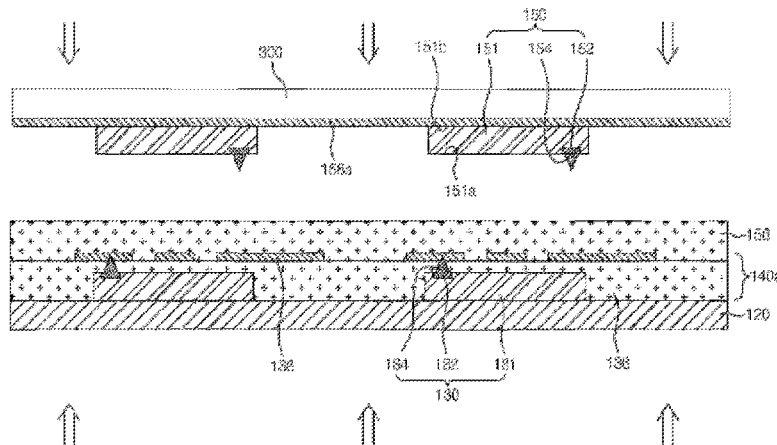


FIG. 1

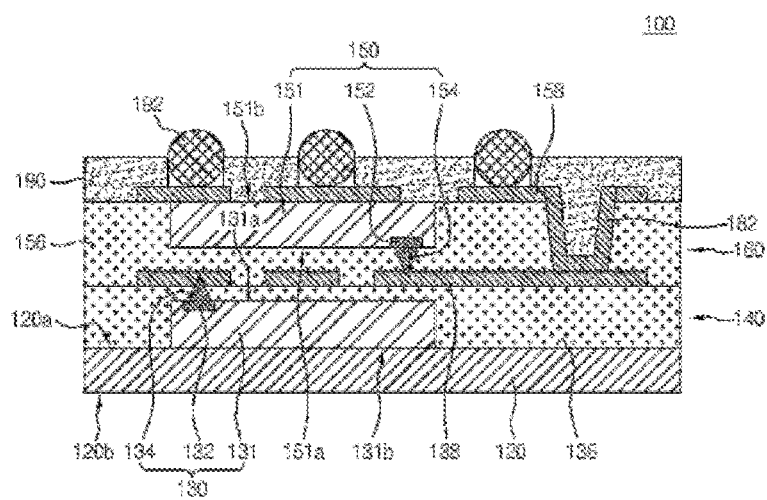


FIG. 2

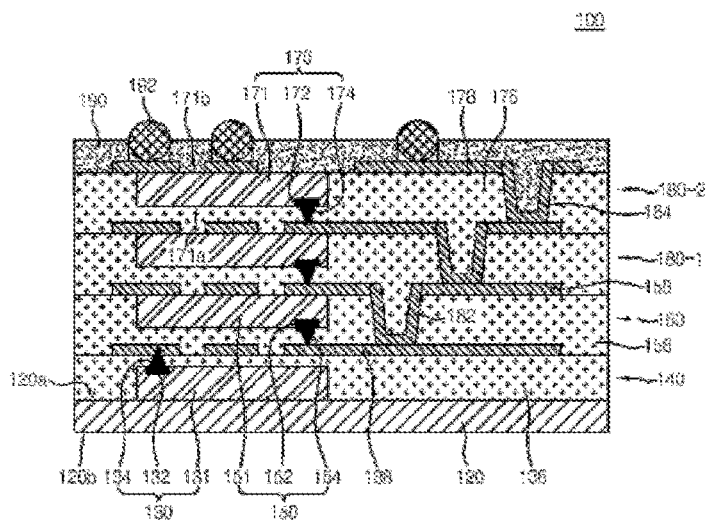


FIG. 3A

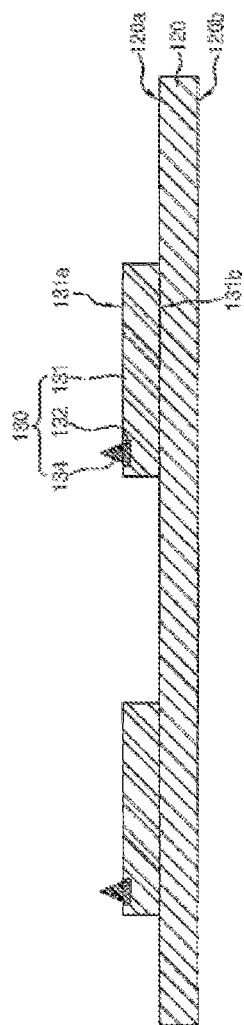


FIG. 3B

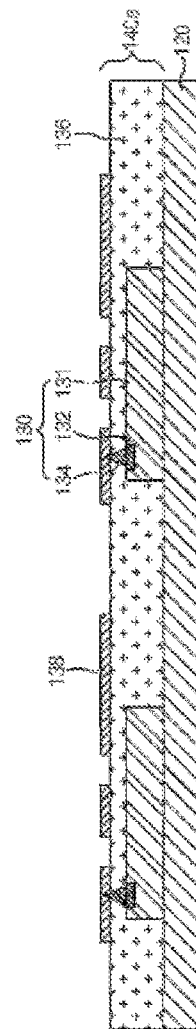




FIG. 3D

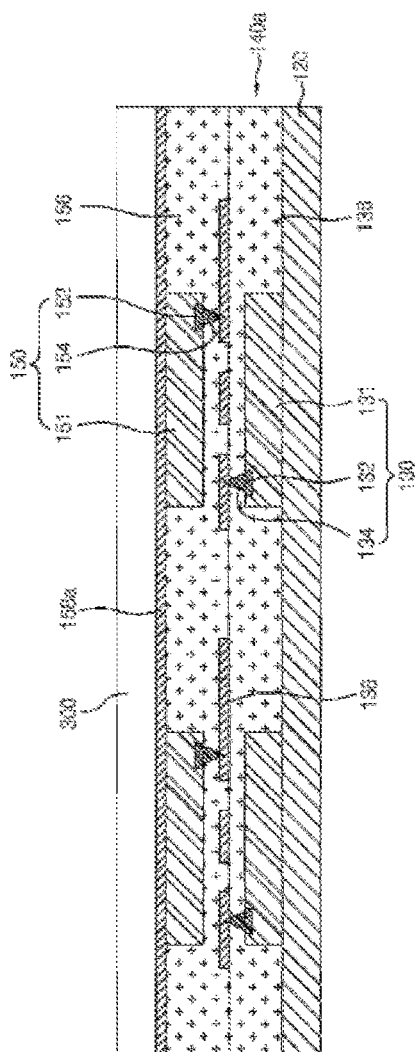


FIG. 3E

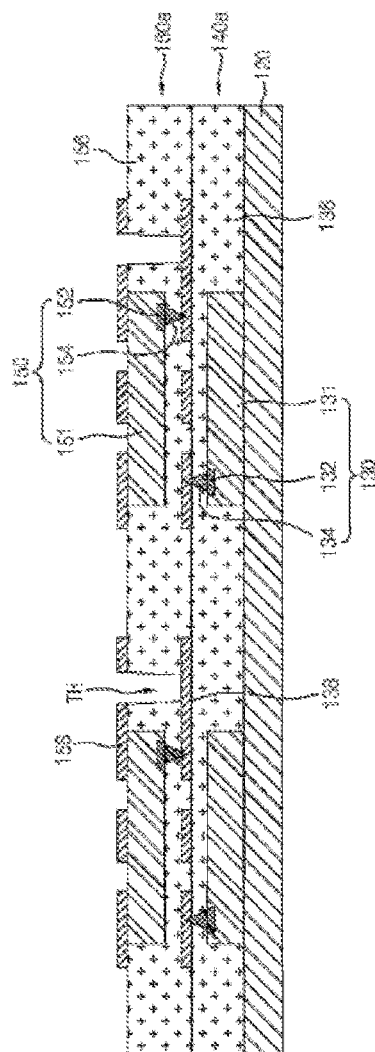






FIG. 3G

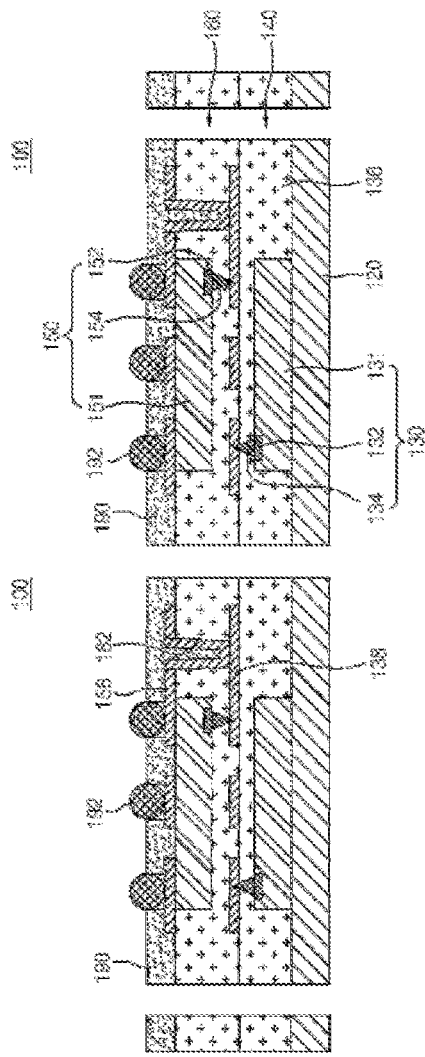


FIG. 4A

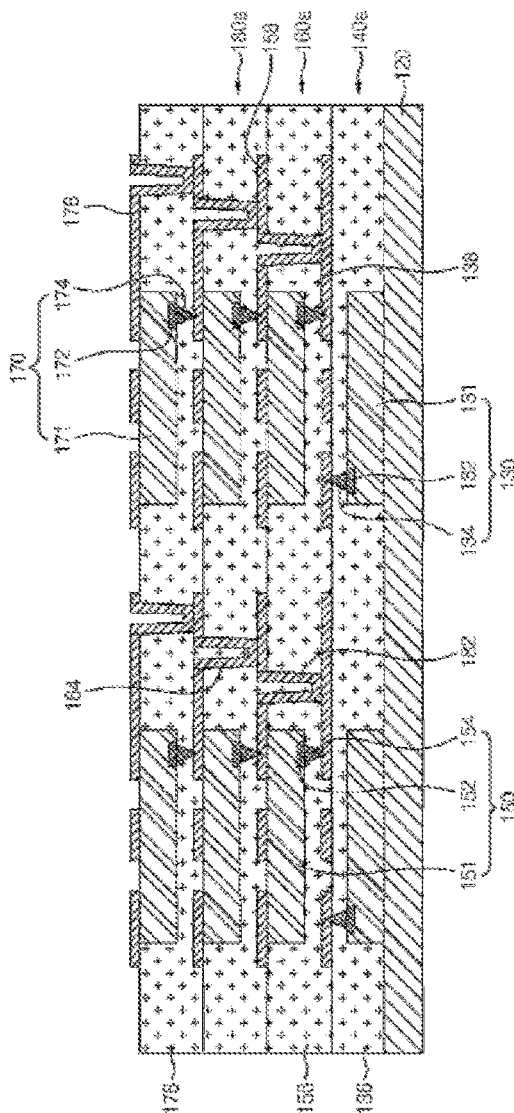
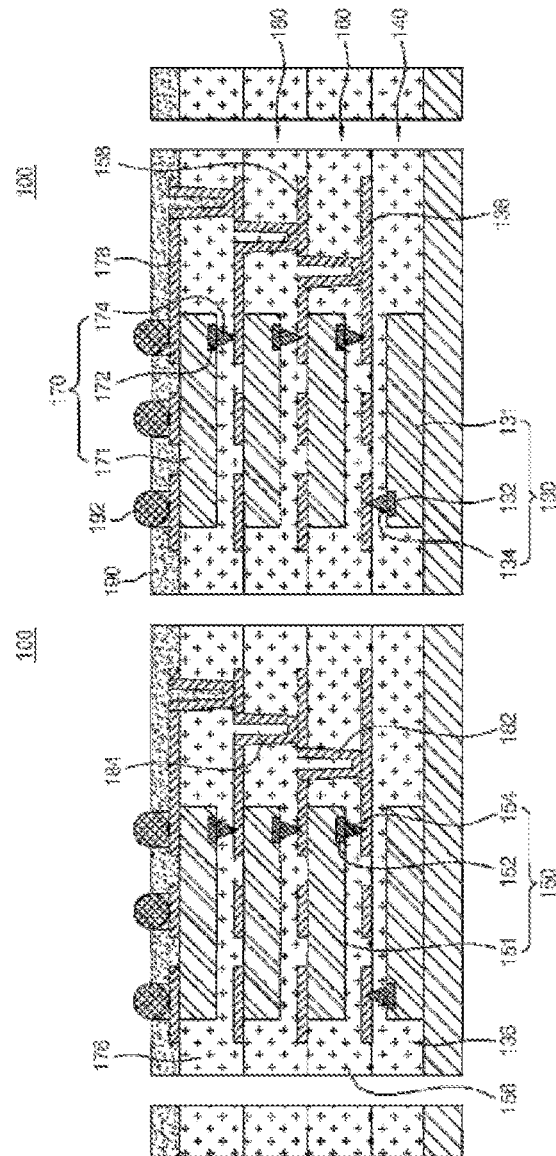


FIG. 4B



# STACK PACKAGE AND METHOD FOR MANUFACTURING THE SAME

## CROSS-REFERENCE TO RELATED APPLICATIONS

The present application claims priority to Korean patent application number 10-2010-0071845 filed on Jul. 26, 2010, which is incorporated herein by reference in its entirety.

## BACKGROUND OF THE INVENTION

The present invention relates to an embedded type stack package and a method for manufacturing the same.

These days, semiconductor chips capable of storing and processing huge amounts of data within extremely short time periods and semiconductor packages having the semiconductor chips have and are further being developed.

In general, semiconductor packages are manufactured through a die sorting process for inspecting semiconductor chips, a die attaching process for mounting good quality semiconductor chips on printed circuit boards, a wire bonding process for electrically connecting the semiconductor chips with the printed circuit boards using conductive wires, and a molding process for molding the semiconductor chips using a molding member such as epoxy resin.

Recently, while a stack package in which a plurality of package units are stacked is being developed, difficulties may exist in manufacturing a slim stack package due to an increase in a volume occupied by a substrate provided to the package units.

Also, in the case where the substrate and semiconductor chips of the respective package units are electrically connected with each other using conductive wires after the package units are stacked on the substrate to realize a stack package, since lengths of the conductive wires connected to the respective semiconductor chips vary, a speed of the operation of the semiconductor chip may decrease.

## BRIEF SUMMARY OF THE INVENTION

Exemplary Embodiments of the present invention are directed to an embedded type stack package and a method for manufacturing the same.

In an exemplary embodiment of the present invention, a stack package includes a cover film, a first package having a first semiconductor chip which is attached to the cover film, a first adhesive member which is formed to seal the first semiconductor chip and a surface of the cover film, and a first circuit pattern which is disposed over the first adhesive member and electrically connected with the first semiconductor chip, a second package disposed over the first package, having a second semiconductor chip which is electrically connected with the first circuit pattern, a second adhesive member which is formed to seal the second semiconductor chip, and a second circuit pattern which is formed over the second adhesive member, and a via formed through the second circuit pattern and the second adhesive member to be electrically connected with the first circuit pattern and the second circuit pattern.

In another exemplary embodiment of the present invention, a method for manufacturing a stack package includes attaching a first semiconductor chip to a cover film, forming a first adhesive member which seals the first semiconductor chip and a surface of the cover film, wherein the first adhesive member has a first circuit metal layer being electrically connected with the first semiconductor chip, forming a first

reconfigured wafer level package which includes a first circuit pattern, the first semiconductor chip and the first adhesive member, by patterning the first circuit metal layer, forming a second adhesive member over the first reconfigured wafer level package, attaching a second semiconductor chip to a carrier board which has a second circuit metal layer, adhering the carrier board including the second circuit metal layer and the second semiconductor chip, to the first reconfigured wafer level package including the second adhesive member, turning upside down the carrier board, removing the carrier board from the second semiconductor chip, the second circuit metal layer, and the second adhesive member, forming a second reconfigured wafer level package including a second circuit pattern, the second semiconductor chip and the second adhesive member, by patterning the second circuit metal layer; and forming a via through the second adhesive member and the second circuit patterns to electrically connect the first circuit patterns and the second circuit patterns with each other.

In yet another exemplary embodiment of the present invention, a stack package includes a first semiconductor chip having a first bump, a first adhesive member on which a first circuit pattern is arranged, wherein the first adhesive member arranged on the first semiconductor chip and the first circuit pattern is coupled to the first bump, a second adhesive member arranged on the first circuit pattern, a second semiconductor chip having a second bump, wherein a second circuit pattern is arranged on the second semiconductor chip, and the second bump is coupled to the first circuit pattern, and a via configured to electrically connect the first circuit patterns and the second circuit patterns.

## BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a cross-sectional view illustrating a stack package in accordance with an exemplary embodiment of the present invention.

FIG. 2 is a cross-sectional view illustrating a stack package in accordance with another exemplary embodiment of the present invention.

FIGS. 3A through 3G are cross-sectional views sequentially illustrating the processes of a method for manufacturing a stack package in accordance with another exemplary embodiment of the present invention.

FIGS. 4A and 4B are cross-sectional views sequentially illustrating the processes of a method for manufacturing a stack package in accordance with another exemplary embodiment of the present invention.

## DESCRIPTION OF SPECIFIC EMBODIMENTS

Hereafter, specific embodiments of the present invention will be described in detail with reference to the accompanying drawings.

It is to be understood herein that the drawings are not necessarily to scale and in some instances proportions may have been exaggerated in order to more clearly depict certain features of the invention.

FIG. 1 is a cross-sectional view illustrating a stack package in accordance with an exemplary embodiment of the present invention.

Referring to FIG. 1, a stack package 100 in accordance with an exemplary embodiment of the present invention includes a cover film 120, a first package 140, and a second package 160. The stack package 100 may further include a via 182, a solder mask 190, and an external connection terminal 192.

The cover film **120** has a surface **120a** and another surface **120b** which faces away from the surface **120a**. The cover film **120** may include any one of a black resin film and an adhesive film. Between these films, the black resin film with a good marking property may be used as the cover film **120**.

The first package **140** includes a first semiconductor chip **130**, a first adhesive member **136**, and a first circuit pattern **138**.

The first semiconductor chip **130** includes a first semiconductor chip body **131**, a first bonding pad **132**, and a first bump **134**. The first semiconductor chip body **131** may have a plate-like shape. The first semiconductor chip body **131** with the plate-like shape has an upper surface **131a** and a lower surface **131b** which faces away from the upper surface **131a**. The first bonding pad **132** is disposed on the upper surface **131a** of the first semiconductor chip body **131**. The first bonding pad **132** may be disposed along an edge portion or both edge portions of the first semiconductor chip body **131**. Unlike this, the first bonding pad **132** may be disposed along the center portion of the first semiconductor chip body **131**. The first bump **134** is disposed on the first bonding pad **132**, and may include any one of a metal and a solder.

The first semiconductor chip **130** may further include a first circuit unit (not shown). The first circuit unit may include a data storage section for storing data and a data processing section for processing the data stored in the data storage section. The first bonding pad **132** may be electrically connected with the data storage section and/or the data processing section of the first circuit unit. The first semiconductor chip **130** is attached to the cover film **120** in such a manner that the lower surface **131b** of the first semiconductor chip body **131** contacts the surface **120a** of the cover film **120**. As a consequence, the first bonding pad **132**, which is disposed on the upper surface **131a** of the first semiconductor chip body **131**, is positioned to face away the surface **120a** of the cover film **120**.

The first adhesive member **136** is formed to seal the first semiconductor chip **130** and the surface **120a** of the cover film **120**. The first adhesive member **136** may include an epoxy-based resin or an epoxy-based film.

The first circuit pattern **138** is disposed on the first adhesive member **136**. The first circuit pattern **138** may include, for example, copper. The first bonding pad **132** of the first semiconductor chip **130** is electrically connected with the first circuit pattern **138** by the medium of the first bump **134**.

The second package **160** includes a second semiconductor chip **150**, a second adhesive member **156**, and a second circuit pattern **158**.

The second semiconductor chip **150** includes a second semiconductor chip body **151**, a second bonding pad **152**, and a second bump **154**. The second semiconductor chip body **151** may have a plate-like shape. The second semiconductor chip body **151** with the plate-like shape has an upper surface **151a** and a lower surface **151b** which faces away from the upper surface **151a**. The second bonding pad **152** is disposed on the upper surface **151a** of the second semiconductor chip body **151**. The second bonding pad **152** may be disposed along an edge portion or both edge portions of the second semiconductor chip body **151**. Unlike this, the second bonding pads **152** may be disposed along the center portion of the second semiconductor chip body **151**. The second bump **154** is disposed on the second bonding pad **152**, and may include any one of a metal and a solder.

The second semiconductor chip **150** may further include a second circuit unit (not shown). The second circuit unit may include a data storage section for storing data and a data processing section for processing the data stored in the data

storage section. The second bonding pad **152** may be electrically connected with the data storage section and/or the data processing section of the second circuit unit.

The second semiconductor chip **150** is disposed in a flip type such that the upper surface **151a** of the second semiconductor chip body **151** faces the upper surface **131a** of the first semiconductor chip body **131**. As a consequence, the second bonding pad **152** of the second semiconductor chip **150** is electrically connected with the first circuit pattern **138** by the medium of the second bump **154**.

The via **182** is formed to pass through the second adhesive member **156** and the second circuit pattern **158**, and electrically connect the first circuit pattern **138** and the second circuit pattern **158**.

The solder mask **190** covers the second circuit pattern **158** and the second adhesive member **156** in such a way as to expose portion of the second circuit pattern **158**.

The external connection terminal **192** is attached to the exposed portion of the second circuit pattern **158**. The external connection terminal **192** may include, for example, a solder ball.

Accordingly, in the stack package in accordance with the exemplary embodiment of the present invention, since semiconductor chips are embedded in adhesive members, it is not necessary to use a printed circuit board, and therefore, the manufacturing costs may decrease. Further, in the stack package in accordance with the exemplary embodiment of the invention, because the semiconductor chips are electrically connected with each other by the medium of circuit patterns and vias, electrical connection paths are shortened, and therefore, a speed of data processing may increase.

Moreover, since a thickness occupied by the printed circuit board may be minimized from the overall thickness of the stack package, a slim stack package may be realized.

FIG. 2 is a cross-sectional view illustrating a stack package in accordance with another exemplary embodiment of the present invention. Since the stack package in accordance with the exemplary embodiment of the invention may have the same component elements as those of the stack package in accordance with the above-described exemplary embodiment of the invention, repeated descriptions will be omitted herein, and the same reference numerals will be used to refer to the same component elements.

Referring to FIG. 2, a stack package **100** in accordance with another exemplary embodiment of the present invention includes a cover film **120**, first and second packages **140** and **160**, and a via **182**. The stack package **100** may further include a third packages **180-1** and **180-2**, a solder mask **190**, and an external connection terminal **192**.

Since the cover film **120**, the first package **140** and the second package **160** may be the same as those of the above-described exemplary embodiment, repeated descriptions thereof will be omitted herein.

One or more third packages **180-1** and **180-2** are stacked over the second package **160**. Each of the third packages **180-1** and **180-2** includes a third semiconductor chip **170**, a third adhesive member **176**, and third circuit patterns **178**.

The third semiconductor chip **170** includes a third semiconductor chip body **171**, third bonding pads **172**, and third bumps **174**. The third semiconductor chip body **171** has an upper surface **171a** and a lower surface **171b** which faces away from the upper surface **171a**. The third bonding pads **172** are disposed on the upper surface **171a** of the third semiconductor chip body **171**. The third bonding pads **172** may be disposed along an edge portion or both edge portions of the third semiconductor chip body **171**. Unlike this, the third bonding pads **172** may be disposed along the center

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portion of the third semiconductor chip body **171**. The third bumps **174** are disposed on the third bonding pads **172**, and may include any one of a metal and a solder.

The third bonding pads **172** of a third semiconductor chip **170** in the third package **180-1** which is positioned lowermost among entire third packages **180-1** and **180-2**, are electrically connected with the second circuit patterns **158** of the second package **160**. That is to say, the third bonding pads **172** of the third semiconductor chip **170** in the lowermost third package **180-1** are electrically connected with the second circuit patterns **158** of the second package **160** by the medium of the third bumps **174**.

The third bonding pads **172** of the third semiconductor chips **170** in the third package **180-2** excluding the lowermost third third package **180-1** among the entire third packages **180-1** and **180-2** may be respectively flip-chip bonded to the third circuit patterns **178** disposed thereunder. That is to say, the third semiconductor chips **170** in the third packages **180-2** except the lowermost third package **180-1** are electrically connected with the third circuit patterns **178** disposed thereunder by the medium of their third bumps **174**.

The stack package **100** may further include additional vias **184**. The additional vias **184** are formed to pass through third adhesive members **176** and third circuit patterns **178** of the third packages **180-1** and **180-2**, and electrically connect the second circuit pattern **158** and the third circuit patterns **178** with each other or the second circuit patterns **158** and the third circuit patterns **178** with each other and the third circuit patterns **178** with one another.

Unlike this, while not shown in a drawing, the additional vias **184** may be formed in an integral type in such a way as to pass through the third adhesive members **176** and the third circuit patterns **178** of the third packages **180-1** and **180-2** at the same positions.

The solder mask **190** covers the third circuit patterns **178** and the third adhesive member **176** of an uppermost third package **180-2** among the entire third packages **180-1** and **180-2** in such a way as to expose portions of the third circuit patterns **178** of the uppermost third package **180-2**.

The external connection terminals **192** are attached to the exposed portions of the third circuit patterns **178** of the uppermost third package **180-2**. The external connection terminals **192** may include, for example, solder balls.

Accordingly, in the exemplary embodiment of the invention, a stack package with a higher capacity compared to the above-described exemplary embodiment may be realized by additionally stacking one or more third packages over the second package.

FIGS. 3A through 3G are cross-sectional views sequentially illustrating the processes of a method for manufacturing a stack package in accordance with another exemplary embodiment of the present invention.

Referring to FIG. 3A, first semiconductor chips **130** are attached to a cover film **120** side by side. The cover film **120** has a surface **120a** and another surface **120b** which faces away from the surface **120a**. The cover film **120** may include any one of a black resin film and an adhesive film. Between these films, the black resin film with an excellent marking property may be used as the cover film **120**.

Each of the first semiconductor chips **130** includes a first semiconductor chip body **131**, first bonding pads **132**, and first bumps **134**. The first semiconductor chip body **131** may have a plate-like shape. The first semiconductor chip body **131** with the plate-like shape has an upper surface **131a** and a lower surface **131b** which faces away from the upper surface **131a**. The first bonding pads **132** are disposed on the upper surface **131a** of the first semiconductor chip body **131**. The

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first bonding pads **132** may be disposed along an edge portion or both edge portions of the first semiconductor chip body **131**. Unlike this, the first bonding pads **132** may be disposed along the center portion of the first semiconductor chip body **131**. The first bumps **134** are disposed on the first bonding pads **132**, and may include any one of a metal and a solder.

The first semiconductor chips **130** are attached to the cover film **120** in such a manner that the lower surface **131b** of the first semiconductor chip body **131** of each first semiconductor chip **130** contacts the surface **120a** of the cover film **120**.

Referring to FIG. 3B, a first adhesive member **136** is formed in such a way as to seal the first semiconductor chips **130** and the surface **120a** of the cover film **120** and to have a first circuit metal layer (not shown) which is electrically connected with the first semiconductor chips **130**. The first adhesive member **136** having the first circuit metal layer is attached to the first semiconductor chips **130** and the cover film **120** by performing a heat pressing process. As a consequence, the first bonding pads **132** of the first semiconductor chips **130** are electrically connected with the first circuit metal layer by the medium of the first bumps **134**.

Next, by selectively patterning the first circuit metal layer, first circuit patterns **138** are formed. Through these processes, a first reconfigured wafer level package **140a**, which includes the first semiconductor chips **130**, the first adhesive member **136** and the first circuit patterns **138**, may be formed.

Referring to FIG. 3C, a second adhesive member **156** is formed on the first reconfigured wafer level package **140a**. Then, after attaching second semiconductor chips **150** to a carrier board **300** having a second circuit metal layer **158a**, the carrier board **300** including the second circuit metal layer **158a** and the second semiconductor chips **150** is turned upside down and is arranged over the first reconfigured wafer level package **140a**.

Each of the second semiconductor chips **150** includes a second semiconductor chip body **151**, second bonding pads **152**, and second bumps **154**. The second semiconductor chip body **151** may have a plate-like shape. The second semiconductor chip body **151** with the plate-like shape has an upper surface **151a** and a lower surface **151b** which faces away from the upper surface **151a**. The second bonding pads **152** are disposed on the upper surface **151a** of the second semiconductor chip body **151**. The second bonding pads **152** may be disposed along an edge portion or both edge portions of the second semiconductor chip body **151**. Unlike this, the second bonding pads **152** may be disposed along the center portion of the second semiconductor chip body **151**. The second bumps **154** are disposed on the second bonding pads **152**, and may include any one of a metal and a solder.

Referring to FIG. 3D, in the state in which the carrier board **300** including the second circuit metal layer **158a** and the second semiconductor chips **150** is turned upside down, the carrier board **300** is adhered to the first reconfigured wafer level package **140a** including the second adhesive member **156** by performing a heat pressing process. Accordingly, the second bonding pads **152** of the second semiconductor chips **150** attached to the carrier board **300** are disposed in a flip type such that they face the first bonding pads **132** of the first semiconductor chips **130**. In this way, the second bonding pads **152** of the second semiconductor chips **150** attached to the carrier board **300** are electrically connected with the first circuit patterns **138** by the medium of the second bumps **154**.

Referring to FIG. 3E, after removing the carrier board **300** from the second semiconductor chips **150**, the second circuit metal layer **158a** and the second adhesive member **156**, second circuit patterns **158** are formed by patterning the second circuit metal layer **158a**. Through these processes, a second

reconfigured wafer level package **160a**, which includes the second circuit patterns **158**, the second semiconductor chips **150** and the second adhesive member **156**, may be formed.

According to an example, holes TH are formed by performing a laser drilling process or a dry etching process in such a way as to pass through the second adhesive member **156** and the second circuit patterns **158**.

Referring to FIG. 3F, by filling a metallic material in the holes TH, vias **182**, which electrically connect the first circuit patterns **138** and the second circuit patterns **158**, are formed.

After forming a solder mask **190** which covers the second circuit patterns **158** and the second adhesive member **156** in such a way as to expose portions of the second circuit patterns **158**, external connection terminals **192** are attached to the exposed portions of the second circuit patterns **158**. The external connection terminals **192** may include, for example, solder balls.

Referring to FIG. 3G, by sawing the first and second reconfigured wafer level packages **140a** and **160a** and the cover film **120** to a package level, the stack package in accordance with the exemplary embodiment of the invention is manufactured.

FIGS. 4A and 4B are cross-sectional views sequentially illustrating the processes of a method for manufacturing a stack package in accordance with another exemplary embodiment of the present invention. Since the method for manufacturing a stack package in accordance with the another exemplary embodiment of the invention may have substantially the same process as the method for manufacturing a stack package in accordance with the above-described exemplary embodiment of the invention, repeated descriptions will be omitted herein.

Referring to FIG. 4A, by conducting the same processes as in FIGS. 3A through 3D, first and second reconfigured wafer level packages **140a** and **160a** are formed over the cover film **120**.

After forming holes (not shown) by performing a laser drilling process or a dry etching process to pass through the second adhesive member **156** and the second circuit patterns **158**, vias **182**, which electrically connect the first circuit patterns **138** and the second circuit patterns **158**, are formed by filling a metallic material in the holes.

One or more third reconfigured wafer level packages **180a**, each of which has a third semiconductor chip **170**, a third adhesive member **176** and third circuit patterns **178**, are formed over the second reconfigured wafer level package **160a**.

The third reconfigured wafer level package **180a** is formed in substantially the same way as the second reconfigured wafer level package **160a**. In other words, the third reconfigured wafer level package **180a** may be formed in such a manner that, in a state in which an additional carrier board (not shown) including third semiconductor chips **170** and a third circuit metal layer (not shown) is turned upside down, the additional carrier board is adhered to the second reconfigured wafer level package **160a** through a heat pressing process and the third circuit metal layer is patterned.

Additional vias **184** are formed through the third adhesive members **176** and the third circuit patterns **178** of respective third reconfigured wafer level packages **180a** in such a way as to electrically connect the second circuit patterns **158** and the third circuit patterns **178** with each other or the third circuit patterns **178** with one another.

The additional vias **184** may be individually formed after forming each third reconfigured wafer level package **180a**. Unlike this, while not shown in a drawing, the additional vias **184** may be formed at once in an integral type after forming all

the third reconfigured wafer level packages **180a**, in such a way as to pass through the third circuit patterns **178** and the third adhesive members **176** of the third reconfigured wafer level packages **180a**.

Referring to FIG. 4B, after forming a solder mask **190** covering the third circuit patterns **178** and the third adhesive member **176** of an uppermost third reconfigured wafer level package **180a** among the entire third reconfigured wafer level packages **180a** in such a way as to expose portions of the third circuit patterns **178** of the uppermost third reconfigured wafer level package **180a**, external connection terminals **192** are attached to the exposed portions of the third circuit patterns **178** of the uppermost third reconfigured wafer level package **180a**.

By sawing the first, second and third reconfigured wafer level packages **140a**, **160a** and **180a** and the cover film **120** to a package level, a plurality of stack packages **100** are individualized, and through this, the stack package in accordance with the exemplary embodiment of the invention is manufactured.

Although specific embodiments of the present invention have been described for illustrative purposes, those skilled in the art will appreciate that various modifications, additions and substitutions are possible, without departing from the scope and the spirit of the invention as disclosed in the accompanying claims.

What is claimed is:

1. A method for manufacturing a stack package, comprising:

- attaching first semiconductor chips to a cover film;
- forming a first adhesive member which seals the first semiconductor chips and a surface of the cover film, wherein the first adhesive member has a first circuit metal layer being electrically connected with the first semiconductor chip;
- forming a first reconfigured wafer level package which includes a first circuit pattern, the first semiconductor chips and the first adhesive member, by patterning the first circuit metal layer;
- forming a second adhesive member over the first reconfigured wafer level package;
- attaching second semiconductor chips to a carrier board which has a second circuit metal layer;
- attaching the carrier board including the second circuit metal layer and the second semiconductor chips, to the first reconfigured wafer level package including the second adhesive member, turning upside down the carrier board;
- removing the carrier board from the second semiconductor chips, the second circuit metal layer, and the second adhesive member;
- forming a second reconfigured wafer level package including a second circuit pattern, the second semiconductor chips and the second adhesive member, by patterning the second circuit metal layer; and
- forming a via passing through the second adhesive member and the second circuit patterns and be electrically connected with the first circuit patterns and the second circuit patterns.

2. The method according to claim 1, wherein, in the adhering of the carrier board to the first reconfigured wafer level package, the second semiconductor chips are arranged in a flip type such that the second semiconductor chips face the first semiconductor chips.

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3. The method according to claim 1, after the forming of the via, further comprising:

forming a solder mask which covers the second circuit pattern and the second adhesive member in such a way as to expose a portion of the second circuit pattern; attaching an external connection terminal to the exposed portion of the second circuit pattern; and sawing the first and second wafer reconfigured level packages and the cover film to a package level.

4. The method according to claim 1, after the act of forming the via, further comprising:

forming one or more third reconfigured wafer level packages, each of which includes a third semiconductor chips, a third adhesive member and a third circuit pattern, to be stacked over the second reconfigured wafer level package.

5. The method according to claim 4, after the forming of the third reconfigured wafer level packages, further comprising: forming an additional via through the third adhesive member and the third circuit pattern of the third reconfigured

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wafer level package in such a way as to electrically connect the second circuit pattern and the third circuit pattern with each other or the third circuit patterns with one another.

6. The method according to claim 5, after the forming of the additional via, further comprising:

forming a solder mask which covers the third circuit pattern and the third adhesive member of the third reconfigured wafer level package which is disposed uppermost among entire stacked the third reconfigured wafer level packages in such a way as to expose a portion of the third circuit pattern of the uppermost third reconfigured wafer level package;

attaching an external connection terminal to the exposed portion of the third circuit pattern of the uppermost third reconfigured wafer level package; and

sawing the first, second and third reconfigured wafer level packages and the cover film to a package level.

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